

## Exhibit "A"

### Mathilda Overhead Bridge Rehabilitation Project TR-02/03-07

#### SCOPE OF WORK

##### 1.0 PROJECT UNDERSTANDING

The Mathilda Avenue Overhead Bridge (Br. No. 37C0058) was constructed in 1965, and seismically retrofitted in 1981 and 1993 by the City. The existing bridge is approximately 227.1m long by 25.3m wide. Mathilda Avenue is a primary arterial in the City of Sunnyvale that spans over two CalTrain tracks and Evelyn Avenue. There are two ramps connecting Mathilda with Evelyn; i.e. an on-ramp from westbound Evelyn Avenue to northbound Mathilda Avenue, and an off-ramp from southbound Mathilda Avenue to westbound Evelyn Avenue.

The primary objective of the project is to bring Mathilda Overhead structure to comply with American Association of State Highway and Transportation Officials standard. Caltrans has identified Mathilda Overhead Bridge as been "functional obsolete" due to the deficiencies in lateral clearance, thus making the bridge improvement eligible for federal funding. The completion of the bridge and roadway improvement will remove this structure from the Eligible Bridge List (EBL) from the state bridge inventory. The project will be funded under the FHWA Highway Bridge Rehabilitation and Replacement (HBRR) program with a mix of federal, state and local funds.

The improvements proposed under the HBRR program include bridge widening and relocating existing approach retaining walls in both directions. The width of the widening along the southbound (SB) direction would vary. The widened structure would include a partial dedicated lane leading to a new loop ramp to Evelyn. The widening along the northbound (NB) direction would provide a transition taper from the existing Evelyn on ramp structure. The NB improvement would also include relocating two pedestrian ramps, and widening of a pedestrian overcrossing over the tracks. A complete seismic analysis will be performed on the entire structure to reflect the changes in current Caltrans seismic design codes and practices. The project would also include realignment of Evelyn Boulevard, and reconfiguration of the Charles Street intersection at Evelyn. The project would require right-of-way takes along the west side of Mathilda, utility relocation, roadway, sidewalk and other site improvements as impacted by the construction of the bridge widening.

## 2.0 WORK TO BE PERFORMED

The Mark Thomas Team has developed a scope of work to complete the environmental planning, engineering and design of the project as described. The scope of services includes four major tasks:

- Task 1 Project Management
- Task 2 Engineering Studies
- Task 3 Environmental Document
- Task 4 Final PS&E

### 2.1 Task 1 — Project Management

Project Management responsibilities will involve preparation and maintenance of the Critical Path Method (CPM) schedule, project team roster, action item list, and coordination meetings with the Project Development Team (PDT). CONSULTANT will coordinate the project kick-off meeting and the monthly trends meetings to report progress, identify issues, and develop the necessary action item list. CONSULTANT will prepare meeting agendas and meeting minutes.

#### 2.1.1 Supervise and Monitor Process (Project Management)

Project administration will involve the following activities:

- Supervise, coordinate and monitor design for conformance to Caltrans standards and policies.
- Maintain Project Files.
- Prepare CPM schedule and update on a monthly basis, tracking critical tasks.
- Apply for JPB encroachment permit.
- Prepare monthly progress reports and invoices.
- Correspondence and memos.

#### Deliverables:

- a. Monthly progress report and invoice.
- b. CPM Schedule and updates.
- c. JPB Encroachment Permit Application.

#### 2.1.2 Meetings and Project Coordination

PDT Working Group Meetings will be held monthly. At or before these progress review meetings, copies of all completed or partially completed reports, studies, plans, and estimates that have been developed or altered during the previous month will be posted on the project web site.

Agencies Coordination: CONSULTANT will perform coordination with Agencies as required for project development. Coordinate design effort with team members, including the following:

- Caltrans Local Assistance and, if applicable, Caltrans Division of Structures
- Peninsula Corridor Joint Powers Board
- FHWA
- Santa Clara Valley Transportation Authority
- Affected utility companies

Meeting with stakeholders will be held on an as-needed basis (total of six meetings assumed in the scope). Work under this task will include monitoring the strategic environment in which the project is conducted from both a political and technical point of view. Assistance to management staff will be provided to aid in the development of the appropriate strategic framework that will ensure the process is meeting expectations. CONSULTANT will provide the required exhibits and documentation materials at all public meetings.

Informal internal team coordination meetings will be held on an as-needed basis.

#### Deliverables

- a. Copies of Record of Minutes and Action Item List as needed.

### **2.1.3 Quality Assurance/Quality Control Program**

A Quality Control (QC) Program will be implemented and maintained. The following quality control procedures will be used during the development of all planning and engineering documents related to this project:

- QC program in effect for the duration of this project.
- All related correspondence and memorandum routed and received by affected persons to be identified, categorized, and incorporated into filing system conforming to Caltrans' Uniform Filing System.
- Where different disciplines are involved, develop means to assure that conflicts and misalignment do not occur.
- Evidence that the QC program is functioning (Quality Assurance).

#### Deliverables

- a. 1 copy of QC Program.

#### 2.1.4 CPM Schedule

Prepare an initial draft Master CPM schedule and distribute it to the Project Team. Schedule will include study preparation periods, major project milestones, agency review periods and critical input from other projects. The schedule will be reviewed and updated as necessary on a quarterly basis, throughout the project duration.

##### Deliverables

- a. Copies of CPM as needed, including updates.

#### 2.1.5 Maintain Project Files

Project files will be maintained in conformity with the Caltrans Uniform Filing System as adapted for this project.

##### Deliverables

- a. One (1) copy of Project Files.

### 2.2 Task 2 – Engineering Studies

Preliminary engineering studies and tasks will be performed to shape and refine project alternatives and determine viable project components. Engineering CADD files prepared by the CONSULTANT shall be provided to the City as necessary for proper coordination during the project and at the completion of the project. File will be in AutoCAD Format.

#### 2.2.1 Data Gathering

CONSULTANT will assemble existing data from the City, such preliminary studies, utilities, drainage reports, traffic data, geotechnical data and right of way information. The team will also visit the project area to review and record existing conditions.

##### Deliverables

- a. Listing of all gathered as-build data.
- b. Listing requesting further information needed to complete the design.

#### 2.2.2 Aerial and Digital Mapping

CONSULTANT proposes to utilize existing digital mapping prepared by Kier & Wright, "Topographic and Boundary Survey" dated July 2001. No further work is anticipated to be required for mapping purposes and for existing boundary surveys.

### 2.2.3 Utility Base Mapping

**2.2.3.1** *Compile Base Plans of Existing Facilities.* Base mapping shall consist of digital plans of field-surveyed information, right-of-way, control, and property ownership information. CONSULTANT will update the mapping done by Kier & Wright with additional surveys.

#### Deliverables

- a. 3 sets of utility base maps.

**2.2.3.2.** *Utility Plans.* This phase consists of compiling base mapping for use by utilities in marking their facilities, and evaluating for potential conflicts. The following procedures shall be followed:

- Request system mapping and as-built from utility companies.
- Compile mapping on base plans, using system mapping, as-built information, and visible as well as surveyed locations of surface utility facilities.
- Prepare cover letter for utility companies. After review and approval by City staff, send plans and cover letter to utilities for their confirmation and/or location of facilities.
- Revise utility mapping per utility comments.
- Return corrected utility mapping to utilities "for information only."
- Potholing and/or field survey is proposed to confirm utility location records. The scope assumes 15 potholing, to be performed by the CONSULTANT.

#### Deliverables

- a. CADD files showing record utility information.
- b. 15 pothole data.

### 2.2.4 Field Surveys

CONSULTANT will supplement the topographic and boundary survey prepared by Kier & Wright, dated July 2001 with additional field surveys. CONSULTANT survey shall consist of additional field topography for determination of accurate elevations at conforms, and critical right-of-way or other controls. Specifically, the detailed survey information shall be prepared as follows:

- Establish and verify centerline control and stationing on Mathilda, Charles and Evelyn, including monument ties.

- Perform field surveys necessary for design in addition to those previously surveyed, specifically along the city streets, for conforms, and along ramps at the edge of pavement, roadway crown, temporary conforms for stage construction, locations of culverts, storm drainage facilities, utility covers, and inverts. Surveys shall consist of roadway cross-sections at 50 foot intervals, extending 15 feet beyond the anticipated right-of-way lines.
- Design for conforms shall be based on field surveyed cross-section data. Contour grading and roadway quantities shall be supplemented by calculation of the digital terrain model.
- Supplement topography with the location of existing fences, poles, signs, street lights, and trees. Trees shall be located by size and type, with drip line included.

#### Deliverables

- a. Copy of original field data.
- b. Adjustment calculations and final results.
- c. Survey Control Data Map.

### 2.2.5 Rights-of-Way Engineering

CONSULTANT will generally follow City procedures for right-of-way engineering as follows:

- Consultant will prepare Rights-of-Way Acquisition Map, showing existing and proposed rights of way lines, with table identifying purposes of take, areas, remainders, and remark. The Topographic and Boundary Survey prepared by Kier & Wright will be used as the basis for the development of the Rights-of-Way Acquisition Map.
- Based on the Rights-of-Way Acquisition Map, City can then proceed with securing appraisals for said right of way. CONSULTANT will also prepare plats and descriptions of all right-of-way needs, including fee take, part take, and all easements (permanent and temporary).

#### Deliverables

- a. Rights-of-Way Acquisition Map
- b. Legal Descriptions and Plats

## 2.2.6 Engineering Studies

- 2.2.6.1 Geometric Approval Drawing (Layout and Profile).** CONSULTANT will prepare geometric approval drawing of the preferred alternative. One geometric approval drawing will be prepared in accordance with Caltrans' standard. Prepare CADD generated 1"=40' scale geometric approval drawings. This work will include geometric refinements and the preparation of GAD in accordance with Caltrans Standards. The draft GAD will be in a form acceptable for inclusion into the Project Report. The Final GAD will include existing planimetric mapping, calculated right-of-way lines and centerlines, mathematized geometric layouts, traffic AM/PM peak hours, profiles, design criteria, and typical sections.

### Deliverables

- a. Geometric Drawings (35% level completion).

- 2.2.6.2 Fact Sheets.** CONSULTANT will prepare exhibits showing all non-standard features, including preparation of fact sheets in relations to the AASHTO/Caltrans standard.

### Deliverables

- a. Fact Sheet Documentation

- 2.2.6.3 Cost Estimation.** CONSULTANT will prepare cost estimates in the Project Report format to be included in the project report.

- 2.2.6.4. Project Report.** CONSULTANT will prepare a draft Project Report following Caltrans guidelines. Submit 10 copies of the draft Project Report to Caltrans for review and comments. If second submittal is required, we shall resubmit additional 10 copies to Caltrans for second review and circulation. Incorporate Caltrans comments and produce 30 copies of the final approved Project Report. Project Report will be used to supplement the City's intent to apply for High Cost Bridge Project funding. CONSULTANT will prepare the necessary application form for the High Cost Bridge funding.

### Deliverables

- a. Project Report

- 2.2.6.5 *Drainage System.* CONSULTANT will utilize HYDRAIN program for storm drainage analysis. The Drainage Report shall include the following elements: Review of existing drainage culverts and ditches, recommendation for additional drainage facilities, and maintaining historic drainage courses. Upgrading of culvert capacity, if required, will be discussed. Drainage inlets will be analyzed for capacity and design spread of water along curb faces. Detailed drainage tributary areas will be mapped from project topographic mapping; the drainage system will be analyzed, using HYDRAIN, to obtain design flows for culverts and ditches.

Deliverables

- a. Drainage Report

- 2.2.2.6 *Retaining Wall System.* CONSULTANT will prepare type selection report for all retaining wall in accordance with Caltrans' standard. Retaining wall type selection will include type, aesthetics and constructability review.

Deliverables

- a. Retaining Wall Type Selection Report

- 2.2.2.7 *Geotechnical Engineering.* The scope of our work will include preparation of a combined bridge foundation and geotechnical design and materials report. The overall work plan is discussed in the following sections.

- *Research and Data Collection:* Review of additional available geologic and soil literature in the vicinity of the site including review of any as-built drawings and existing LOTB.
- *Permits/USA Clearances:* We will comply with local permit requirements. We will field locate the borings and call for USA clearance.
- *Field Exploration:* Borings will be drilled for the proposed structure (estimated 2 borings up to 80 feet deep) and the retaining wall/roadway work (estimated 6 borings up to 30 feet deep). CONSULTANT will prepare boring location map showing the locations of the proposed deep and shallow borings.

CONSULTANT will classify and log subsurface soil conditions encountered in each test boring continuously at the time of drilling. CONSULTANT will obtain

"relatively undisturbed" and bulk samples of substrata from test borings. The borings will be drilled and capped in accordance with the permit requirements. Generally the borings are required to be backfilled with cement grout.

- *Laboratory Testing:* CONSULTANT will perform laboratory tests on representative soil samples such as moisture density, unconfined compression, consolidation, gradation analyses, R-value tests, corrosion tests and Plasticity Index test, as necessary.
- *Soils Analysis/Evaluation:* CONSULTANT will perform engineering analyses and develop design recommendations for the bridge foundations, embankments, retaining walls, and pavement design. Slope stability and settlement evaluation of proposed embankments will also be considered.
- *Draft combined Geotechnical Design Report and Bridge Foundation Report:* CONSULTANT will prepare preliminary recommendations in one combined report for the bridge foundations and for the embankments, retaining walls, and pavement design.
- *Final combined Geotechnical Design and Bridge Foundation Report:* CONSULTANT will prepare one combined geotechnical design report including design recommendations for bridge structure, embankment foundation, retaining walls, and pavement sections, recommended slopes, groundwater conditions, and corrosion evaluations, etc.

The geotechnical report will contain design recommendations on seismic considerations, liquefaction potential and comment, and information related to Caltrans Seismic design criteria (SDC v 1.2) such as depth to rock like material, etc. shall be provided.

CONSULTANT will prepare a log of test boring sheet based on the bridge General Plan.

#### Deliverables

- a. Combined Geotechnical/Foundation Report

**2.2.2.8** *Traffic Engineering.* Traffic/transportation analyses will be conducted. The transportation analyses will primarily focus of traffic operations in the study area. They will also

address other transportation issues including pedestrian and bicycle circulation, the parking impacts of removing the parking lot to accommodate the new ramp, and intrusion of traffic into surrounding neighborhoods.

The tasks to be conducted for each purpose are described below.

CONSULTANT will estimate 2020 volumes and evaluate future intersection operations to assist the team in developing the final design solution. The operations analysis will be conducted using a CORSIM model, which will be validated to existing conditions during the morning and evening peak hours. The CORSIM model will include the following intersections:

1. Mathilda Avenue/Indio Way
2. Mathilda Avenue/California Avenue
3. Mathilda Avenue/Washington Avenue
4. Mathilda Avenue/Iowa Avenue
5. Evelyn Avenue/SB Mathilda Avenue Off-Ramp
6. Evelyn Avenue/SB Mathilda Avenue On-Ramp
7. Evelyn Avenue/NB Mathilda Avenue Off-Ramp (Agena Way)
8. Evelyn Avenue/NB Mathilda Avenue On-Ramp
9. Evelyn Avenue/Frances Street

- *Collect Data:* The physical characteristics of the intersections will be obtained from aerial photographs (to be provided to Fehr & Peers) and reviewed during a site visit to identify intersection lane configurations, intersection spacing, and left-turn and right-turn pocket storage lengths.

AM and PM peak-hour traffic volumes for Existing Conditions will be obtained from city staff, other traffic studies completed in the study area, and our files. The fee estimate assumes six new peak-period counts. Traffic signal timing information will be provided by the city.

Travel time surveys will be conducted on Evelyn Avenue, between Charles and Frances, and on Washington, between Indio and Iowa. Five runs will be conducted in each direction during the AM and PM peak periods. (The ability to conduct these runs will be dependent on construction activities in the downtown area.)

Queue length surveys will be conducted for the southbound left-turn lane on Mathilda Avenue at Washington Avenue during the AM and PM peak hours.

- *Develop and Validate CORSIM Model:* The CORSIM model will be developed and validated to the results of the travel time and queue length surveys.
- *Estimate Traffic Volumes for 2020 Conditions:* 2020 volume projections will be based on forecasts from the City's travel demand model, which will be refined based on trip assignments prepared for traffic studies of nearby developments. It is assumed by the CONSULTANT that the City's model is assumed to include the Moffett Park Specific Plan and other planned projects in the Tasman Drive/Fair Oaks Avenue area. CONSULTANT will perform cursory review of the network and land use of the City's model. Modification to the model due to outdated, or incorrect land use will be conducted by the CONSULTANT as additional service. The 2020 volumes will be reassigned due to the proposed ramp reconfiguration. Any Capital Improvement Program projects and other funded improvements expected to be completed by 2020 will be assumed to be in place.
- *Conduct Detailed Operations Analysis:* The CORSIM model will be used to evaluate the operational improvement in comparison to 2020 No Project. It will also be used to determine the appropriate lane configuration and traffic signal phasing at the intersection of the new loop ramp and Evelyn Avenue, in addition to the interaction between the new intersection and the other closely spaced intersections on Evelyn Avenue. Measures of effectiveness to evaluate project adequacy will include intersection operating levels, corridor travel times, and vehicle queues. CONSULTANT will evaluate up to two project design alternatives.
- *Evaluate Charles Street Options:* CONSULTANT will evaluate the four intersection options for Charles Street by estimating projected traffic volume and intersection level of service changes. Intersection counts will be conducted at Charles/Washington and Charles/Evelyn for this analysis. The magnitudes of traffic volume added to other residential streets will be estimated.

- *Recommended Modifications:* Modifications to the proposed design to provide acceptable/improved operations and to select the preferred design alternative will be recommended. CONSULTANT will discuss recommendations with the design team and city staff during a meeting.
- *Attend Community Meeting:* Fehr & Peers staff will attend a community meeting.
- *Ramp Closures and Detour Plans:* The CORSIM model will also be used to test the effect of ramp closures during construction. The traffic volumes used in this analysis will be near-term volumes, not 2020 projections. CONSULTANT will prepare stage construction report, highlighting pros and cons with alternative methods of construction, as well as reviewing constructability of the project.
- *Assess Pedestrian and Bicycle Provisions During Construction:* CONSULTANT will work with the design team to identify provisions for pedestrian and bicycles during construction, e.g. temporary sidewalks/pathways and temporary pedestrian signals.
- *Develop Near-Term Projections:* A list of approved projects in the area and their trip estimates will be provided to Fehr & Peers by City staff. These trips will be added to the existing volumes to represent traffic volumes for project construction conditions. The volumes will be manually reassigned to estimate the effect of ramp closures.
- *Evaluate Effect of Closures using CORSIM Model:* The CORSIM model will be run to evaluate the effects of closing the westbound Evelyn to northbound Mathilda ramp and (separately) the effect of closing the southbound Mathilda to westbound Evelyn ramp during construction on the intersections in the model.
- *Evaluate Effect of Detour Plans on Other Intersections:* The likely detour route for the southbound Mathilda to westbound Evelyn ramp is Washington to Pastoria to Evelyn. This detour will affect the intersections of Washington/Pastoria and Pastoria/Evelyn (not included in the CORSIM model). AM and PM peak hour traffic counts will be conducted for these intersections. Traffic from approved developments will

be added. Intersection level of service calculations will be conducted using TRAFFIX to evaluate the impacts of the added (detoured) traffic.

The likely detour route for the westbound Evelyn to northbound Mathilda ramp is Evelyn to Sunnyvale to California to Mathilda. This detour will affect the intersections of Evelyn/Sunnyvale and Sunnyvale/California (not included in the CORSIM model). AM and PM peak hour traffic counts will be conducted for these intersections. Traffic from approved developments will be added. Intersection level of service calculations will be conducted using TRAFFIX to evaluate the impacts of the added (detoured) traffic.

- *Present Results:* The results will be presented in a memorandum report.

The following tasks include the work that would be necessary for a Mitigated Negative Declaration.

- *Describe Environmental Setting:* Field visits will be conducted to identify existing transit, pedestrian, and bicycle facilities in the vicinity of the site. Existing traffic and roadway operations will be obtained from previous Subtasks.
- *Evaluate Project and No Project Conditions:* Traffic volume projections (2020) and intersection operations for Project and No Project conditions will be obtained from previous Subtasks.
- *Evaluate Project Alternative:* The 2020 volumes will be reassigned to reflect any changes in traffic movements caused by the Project Alternative (to be identified). Intersection level of service calculations will then be conducted for the affected intersections to evaluate project alternative "impacts" from a CEQA/NEPA perspective.
- *Evaluate Neighborhood Intrusion, Parking and Bicycle and Pedestrian Issues:* The potential of the project to cause (or reduce) neighborhood intrusion will be evaluated using existing daily traffic counts on Charles. Parking impacts will be addressed by using available parking analyses conducted by Walker Parking Consultants and Fehr & Peers in the

downtown area. The project's enhancements to pedestrian and bicycle circulation will be described.

- *Identify Significant Impacts and Recommend Mitigation Measures:* The impacts of the project from a transportation perspective will be identified by comparing the results for 2020 No Project Conditions to the results for 2020 Project Conditions. If significant impacts are identified, either feasible mitigation measures or design modifications will be recommended.
- *Prepare Documentation:* The results of the analysis will be documented in a report suitable for inclusion as an Appendix to a CEQA/NEPA document. The administrative draft report will be submitted to the City for review and comment. Review comments will be incorporated into the draft report. Three (3) copies of each report will be submitted. CONSULTANT will prepare responses to comments on the draft environmental document.
- *Attend Meetings:* Fehr & Peers will attend one staff-level meeting and one public hearing for this part of the scope of work.

#### Deliverables

- a. Traffic Data/Forecast
- b. Operational Report
- c. Corsim Simulations
- d. Stage Construction Report
- e. Environmental Document Input

**2.2.2.9** *Structural Design — Bridge Design.* CONSULTANT will provide structure engineering and design support on the bridge and ramp widening of the proposed HBRR program on Mathilda Avenue OH, including the two sides widening on Mathilda OH, new loop ramp and approach to Evelyn, and two pedestrian ramps to be upgraded to ADA. CONSULTANT will prepare independent checking of all structure plans. All deliverables will be in English units, except where noted.

- *Site Visits:* CONSULTANT will conduct site visits to identify features that may not otherwise be noticed from other sources.

- *Alignment Alternatives for Structures Design:* It is assumed that three alignment alternatives will be studied for the project and the CONSULTANT will produce the Advance Planning Study plan for one recommended alternative.
- *Structures Design Coordination:* CONSULTANT will interface and coordinate with all design team members, City, outside agencies and Caltrans in respect to structures design, including preparation of Subsurface Investigation and Foundation Report, Roadway Layout and Alignment Plan, Drainage Report, Utility Plan Report, etc.
- *Seismic Retrofit Analysis:* As part of the bridge widening design, CONSULTANT will analyze the structure for possible retrofit requirement. The original structure has been seismic retrofitted by the City in early 90'. Since then there has been a number of criteria and seismic code changes that would impact the effectiveness of the seismic retrofit. Widening of the main structure, as well as the removal of existing SB ramp and the substructure (columns and foundation) and reconstruction of new ramp structure, would significantly impact the seismic performance of the original structure. A complete dynamic analysis, using the existing dynamic analysis developed by CONSULTANT as a base model, will be performed for the entire structure, including the new proposed widening. The base model was developed in 1991, which will have to be modified to represent the practice that is used today. The modification would include adding soil structure interaction (foundation springs). Additional non-linear push analysis will also be performed to determine the system ductility at bents, which was not done in the original 1991 model. The effect of the widening will be determined from the global analysis, and seismic retrofit, which could be incorporated as part of the widening design, will be studied, and recommendation will be provided in a written report.
- *Bridge General Plan:* CONSULTANT will prepare the Bridge General Plan for the Mathilda Avenue bridge widening and ramp reconstruction. The general plan process is considered the Caltrans Structure Type Selection process, requiring the approval of the Caltrans Structure Local Assistance (SLA). CONSULTANT will develop cost-effective design by

optimizing the lengths and superstructure type for this specific site using value engineering concepts, public safety concerns and delays, traffic staging and control, false-work requirements, and constructability issues. A cast-in-place bridge and an alternative pre-cast girder bridge system will be studied for the crossing span over the JPB tracks. The most cost effective solution will be recommended. Cast-in-place pre-stressed concrete girders may be the most economical to construct, the cost of that option will include cost due to other considerations, such as construction schedule, construction delay, and higher insurance cost because of the use of false-work over the JPB tracks.

- *Prepare Type Selection Report:* CONSULTANT will prepare a bridge type selection report following Caltrans Information & Procedure (I&P) guidelines for bridge type selection memo. The report will include the background information of the bridge, geometrics, utility and drainage considerations, and the bridge alternatives studied, as well as the recommended structure types. The report will also address the constructability issues, such as stage construction, temporary shoring and framings, temporary structures, etc. The report will include the bridge general plan, and the preliminary quantity and cost estimates for the bridge works. Results from the seismic retrofit study will also be included in the Type Selection Report.
- *Type Selection Meeting:* CONSULTANT will attend a structure type selection meeting to be held in the City. CONSULTANT anticipate the meeting will be attended by the City, County of Santa Clara, and Caltrans Local Assistance. CONSULTANT will present the design, preliminary seismic design analysis and preliminary design of columns and foundations to the City/Caltrans engineers. Approval of the type selection would signify the approval of the bridge design concept, and to continue toward the final PS&E phase of the bridge design effort.

#### Deliverables

- a. Bridge General Plans.
- b. Bridge Type Selection Report.

**2.2.2.10 Architectural and Landscape Elements.** CONSULTANT will prepare all architectural and landscape elements and will include the concept development and design of the following:

1. New railing, aesthetic treatment and light design for bridge and ramp.
2. New replacement ADA-compliant pedestrian ramp connecting from upper deck to grade below.
3. Aesthetic treatments for road surface and pedestrian crossing at key points.
4. New pedestrian hardscaping and sidewalks at grade.
5. Replacement landscaping, new landscaping enhancements and irrigation system.
6. New lighting at streetscape and pedestrian areas.
7. New signage for motorists, bicyclists and pedestrians.
8. New symbolic entry features.
9. Architectural features such as walls, railings, etc.

Scope of work shall include the following for concept phase:

- Prepare site plan studies and design character sketches.
- Prepare concept design documents and visual simulations for input into environmental document.
- Provide materials research and outline specifications.
- Coordinate with all team members, City (planning department, fire departments, traffic and public works).
- Attend up to 6 team meetings with City and presentation exhibits.
- Review and implement changes from City's comments.

#### Deliverables

- a. Architectural sketches
- b. Visual/Aesthetics Alternatives
- c. Visual Assessment Report
- d. Presentation Materials
- e. Materials Research

## 2.3 Task 3 – Environmental Phase

CONSULTANT will undertake all of the tasks associated with compliance through the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for this project. The environmental scope is based on the assumption that the project will qualify for a Negative Declaration under CEQA and a Categorical Exclusion (CE) under NEPA. As such, the appropriate environmental document will be a CEQA-compliant Initial Study (IS).

From a process perspective, since the City of Sunnyvale will be the Lead Agency under CEQA. FHWA, through Caltrans Local Assistance Branch, will be the Lead Agency under NEPA.

The IS will be prepared to comply with the requirements of CEQA. It will include a project description, discussion of the environmental setting, environmental checklist, and a discussion of environmental impacts. It is assumed that significant environmental impacts – if any – will be mitigated by measures incorporated into the project. The IS will, where appropriate, describe these measures.

IS will focus on the following environmental subject areas:

- Traffic Circulation
- Noise & Vibration (at adjacent residences)
- Visual/Aesthetic Impacts
- Cultural Resources
- Hazardous Materials
- Construction Impacts
- Initial Site Assessment

CONSULTANT will submit an administrative draft version of the IS to the City for review. The IS will be revised based on comments received from the City. CONSULTANT will print the IS and submit up to 50 copies to the City for distribution to the public and governmental agencies.

At the close of the 30-day public review period, CONSULTANT will respond to comments received on the IS.

At the City's request, CONSULTANT will attend any and all public meetings/hearings where environmental issues/approvals are on the agenda.

Additional assumptions for environmental scope are listed below:

- Initial Study will analyze one build alternative with 3 potential alternative for Charles Street.
- Subsurface archaeological work not included in scope.

- No more than three pre-1959 structures to be evaluated for historic significance.
- Attendance by DJP&A at up to seven (7) team meetings/hearings/community meetings.

## 2.4 Task 4 — Final Design

This task includes the preparation of the PS&E and post-design services as follows.

The PS&E package shall be submitted at 60%, 90%, and 100% stages of completion, including assisting the City during the bidding and post design period. The intent of intermediate submittals is to define the project for review by the City and Caltrans staff, and to allow for major comments prior to the investment of significant design effort in design details. The approach will be to develop a skeleton plan set, based on the Geometric Approval Drawings, and build upon the set by adding plan information and additional detail sheets until a complete, buildable, and biddable package is reached.

The PS&E will be prepared to City/Caltrans format.

**2.4.1 60% Submittal.** This submittal is defined as the 100% design completed, but unchecked. All elements of the plans shall be included in this stage. This submittal, based on CONSULTANT definition of the 65%, will allow Caltrans full circulation and review. The project will be circulated to the Permit Division for first review.

**2.4.1.1 PUC/JPB Permit Application and Coordination:** CONSULTANT will prepare signature ready PUC/JPB permit application for the widening of Mathilda over JPB facility. CONSULTANT will assist City with the permit processing.

**2.4.1.2 Caltrans Local Assistance/VTA Coordination:** CONSULTANT will prepare signature ready high cost project funding application to be processed through CT/VTA. CONSULTANT will assist City with the application processing.

**2.4.1.3. Bridge Plans:** The bridge design will have prepared in accordance with the codes and standards of Caltrans. The following list summarizes the key design components of the structural improvements for the Mathilda Avenue Overhead structure widening and ramp reconstruction.

All plans and structure calculations will be converted to English (Imperial) units, follow Caltrans Bridge Design

### Specifications.

Structure aesthetics design will be included for the design of the special barrier rail, electroliers on barriers, and other special treatment recommended by the project Architect. Barrier rail will have to conform to the approved aesthetic details.

Structure design will follow the latest Caltrans Seismic Design Criteria (SDC).

Structure will be designed with the properly coordinated construction sequence and staging plans. Construction joints will be placed and specified on the plans to indicate location of structural splicing.

Utility list will be updated at the bridge. New utility openings will be provided to accommodate new or realigned utilities as determined during the Preliminary Engineering Phase. Utility relocation will be referenced in the bridge plans.

All bridge plans shall conform to Caltrans Bridge Design Specification. Design references from Caltrans will also be used extensively for the design of these structures, such as Bridge Memo to Designer, Bridge Design Aids, Bridge Design Practices, and Bridge Design Details.

The list of plans is shown below:

	Plan	Scale	Estimated Number of Sheets
1.	Bridge General Plans	1" = 30'	1
2.	Foundation Plans	1" = 20'	2
3.	Deck Contour Plan	1" = 40'	1
4.	Abutment Plan/ Elevation and Sections	Var.Scale	4
5.	Wingwall/ Retaining Wall Layout and Details	1"=10'	5
6.	Bent Layout and Details	1"= 20'	8
7.	Girder Layout and Sections	1" = 30	2
8.	Girder Sections and Details	1/4"= 1'	2
9.	Girder Details	3/8" = 1	2
10.	Approach Slabs and Special Fence Details	Var.Scale	3

Plan	Scale	Estimated Number of Sheets
11. Closure Pour Details	Var. Scale	1
12. Construction Staging and Phasing	1"= 40'	2
13. Pedestrian Ramp Plans	1" = 20'	1
14. Pedestrian Ramp Sections and Details	¼ " = 1'	3
15. Concrete Barrier Details	3/8" = 1'	2
16. Slope Paving Plan and Details	Var. Scale	2
17. Structure Removal Plan	1" = 40'	1
18. Log of Test Borings		1

The structural calculations will be performed with standard bridge design software used by Caltrans. New seismic analysis following Caltrans SDC will be required as well new calculations for the structural element. Calculations will be prepared in imperial units.

**2.4.1.4** *Roadway Plans:* The following plan sheets will comprise the final plan package for roadway portion:

Plan	Scale	Estimated Number of Sheets
1. Title Sheet	1"=1000'	1
2. Typical Cross Sections	1"=10'	2
3. Standard Plan Sheet		2
4. Key Map and Line Index		1
5. Layout	1"=40'	3
6. Profile Superelevations	1"=10'	2
7. Construction Details		6
8. Storm Water Pollution	1"=40'	6

	Plan	Scale	Estimated Number of Sheets
9.	Contour Grading	1"=40'	3
10.	Drainage Plan	1"=40'	4
11.	Drainage Profile and Details		4
12.	Drainage Quantity Sheet		2
13.	Utility Plans, Details	1"=40'	4
14.	Stage Construction and Traffic Handling	1"=40'	22
15.	Construction Area Signs & Detour Plans		4
16.	Pavement Delineation Plans & Quantities		4
17.	Summary of Quantities		4
18.	Signs		2
19.	Electrical - Lighting		4
	Traffic Signals		4
20.	Retaining Wall		12
21.	Landscaping/Aesthetics		14

**2.4.1.5** *Special Provisions:* CONSULTANT will prepare roadway, bridge and structure construction specifications in conformance with the most current edition of Caltrans Standard Special Provisions and Specifications. The Standard Specifications are supplemented, as necessary, by using Caltrans Standard Special Provisions and edited, as necessary, for specific project requirements.

**2.4.1.6** *Quantity and Cost Estimates:* CONSULTANT will produce the quantity and cost estimates of the roadway, structure components of this project. Quantity take-offs

will be based on the Caltrans standard measurement and payment provisions, and as modified by the City. Cost estimates will be based on the latest Caltrans Cost Data and the available construction cost and bid data from the City of Sunnyvale and other nearby cities with similar project scope and complexity.

- 2.4.1.7** *Utility Process:* CONSULTANT will submit 60% PS&E package to all utility agencies impacted by this project and will provide Utility Notices per Caltrans' requirements.

Deliverables

- a. 60% PS&E.
- b. Utility Notices.
- c. JPB/PUC Permit Application.
- d. Funding Application.

- 2.4.2** *90% Submittal.* This submittal represents complete checked plans, ready for first review for bidding purposes.

This phase essentially develops plans and specifications to 100% completion, with quality control for Agency' review, and circulation to various service units within City, Caltrans and other public agencies.

- 2.4.2.1** *PS&E Review:* CONSULTANT will review comments from 60% Caltrans and City's technical peer review committee and incorporate the comments for the Pre-final PS&E submittal.
- 2.4.2.2** CONSULTANT will make a presentation to the City's Planning Department or Council, and to the Technical Peer Review Committee. Seek design inputs to ensure that the 65% level of PS&E is progressing in the direction desired by the City and the Peer Review.
- 2.4.2.3.** CONSULTANT will update project plans to 90% completion.
- 2.4.2.4** CONSULTANT will continue to assist City with JPB/PUC and HBRR applications/permits.
- 2.4.2.5** CONSULTANT will continue to assist City with utility clearances. CONSULTANT will prepare Rights of Way Certification and Project Engineer's Certification of Utilities.

- 2.4.2.6 *Reports:* CONSULTANT will finalize the drainage, foundation and materials reports by incorporating comments from the 60% submittal.
- 2.4.2.7 CONSULTANT will prepare additional design exceptions discovered during the 60% PS&E.
- 2.4.2.8 CONSULTANT will prepare Project Specification, including all federal requirements.
- 2.4.2.9 CONSULTANT will prepare quantity calculations, takeoffs, and estimates. Unit price bid schedule and a construction cost estimate, and complete set of structural and geotechnical calculations.
- 2.4.2.10 *Independent Check:* CONSULTANT will perform structure independent check (IC). The IC process will follow the Caltrans practice and a registered professional engineer will check the plans independently, and it will include independent checking of structure designs, plan preparation, and quantity estimates. Differences in the calculations will be reconciled first before the 90% plans are submitted to City/ Caltrans for review and approval. CONSULTANT will respond to the IC check comments, and will provide a written memo outlining resolutions to all the check comments and design discrepancies. CONSULTANT will also reconcile the check comments on the quantity checks in accordance with Caltrans Bridge Design Aids Section 11 "Estimating."

#### Deliverables

- a. 20 sets of 90% PS&E.
  - b. Independent Bridge Checked Calculations.
  - c. R/W Certification.
  - d. Project Engineer's Certification.
  - e. Final Reports.
- 2.4.3. *100% Submittal:* This submittal represents complete checked plans, ready for bidding purposes.

This phase incorporates comments from the 90% PS&E, and produces the Final PS&E ready for construction.

- 2.4.3.1. CONSULTANT will update roadway and structure plan sheets, quantities, estimates and project specifications, incorporating comments from the 90% PS&E submittal. Complete the PS&E by performing an Independent Quality Control.

2.4.3.2. CONSULTANT will review comments from technical peer review staff and provide comments or suggestions for revisions, if necessary.

2.4.3.3 CONSULTANT will supply design and construction information required by permit agencies.

2.4.3.4 *Bridge Resident Engineer's Pending File:* CONSULTANT will prepare pending resident engineer's file. Items to be included in the pending file consist of: prints and reproducible of the contour plans, produced in a scale of 1"= 4' for the use by the RE for false work check and determination of camber strips. The RE Pending File will also include the movement rating calculations; quantity summaries; special instructions from the designer; and other materials as appropriate. CONSULTANT will also provide an estimated construction schedule and duration based upon the quantities developed by previous tasks by estimating the required number of working days for each phase of the construction.

Deliverables for Final PS&E:

- a. 20- final plans (complete set).
- b. 1-Vellum reproducible.
- c. AutoCAD format.
- d. Electronic copy of specifications in MS Word, provided in one file, formatted and spell-checked.

2.5 Post-Design Services: CONSULTANT will provide post-design services to the City during the bidding and award phases, and through the construction period of this project. This post-design assumes CONSULTANT will bill City on a time and material basis. When the post design services budget has been expended to 70%, CONSULTANT will notify City of the status of the construction phase in relations to the design oversight budget expended to date and provide updated estimate to complete the construction phase of the project.

The post design services shall include the following tasks by the CONSULTANT:

- Assist in Bidders List
- Attend Pre-bid Conference
- Assist in Questions and Bid Addenda
- Attend Pre-Construction Conference
- Attend up to 13 coordination meetings
- Perform period field reviews up to 12 field reviews.
- Coordinate with utility agencies

- Review and respond to request for information
- Evaluate requests for quotation
- Perform final walk through inspection with City's resident engineer.
- Prepare and submit for City's file final record as-build plans. Record as-build plans will be prepared based on the resident engineer's redlined markup set.

**Exhibit "A-1"**  
**Milestone Schedule for**  
**Mathilda Avenue Overhead Improvements**

<b>ID</b>	<b>Task</b>	<b>Finish</b>
1	Notice to Proceed	8/4/03
5	Present Alternative Study Findings	8/27/03
7	Submit Final VE (Alternative Study) Report	9/22/03
8	Council Presentation - Alternative Study	10/7/03
9	Begin Environmental/Prelim. Engineering	10/10/03
13	Approved/Confirmed PES findings	10/30/03
19	Submit Prelim. Geometric Layout	11/20/03
21	Submit Draft Aesthetic Guidelines	12/16/03
22	Complete Preliminary Engineering Plans	12/25/03
20	City Completes Prelim. Layout Review	1/1/04
29	Submit Operations Report	1/13/04
23	City Staff Completes Review Aesthetic	1/22/04
31	Submit Traffic Impact Report	2/2/04
24	Public Input Aesthetic Meeting	2/3/04
26	Submit Final Aesthetic Guidelines	2/10/04
42	Submit Technical Studies to CT	2/17/04
32	City Completes Review Traffic Reprot	3/1/04
47	Hold Informal First Public Meeting	3/31/04
33	Submit Final Traffic Report	3/31/04
43	Caltrans Completes Review Tech Reports	4/6/04
36	Submit Final Geometrics	4/16/04
44	Submit Final Technical Studies	5/4/04
49	Submit Admin. Draft IS/CE	5/14/04
57	Hold Second Informal Public Meeting	7/2/04
52	CT Completes Review IS/CE	7/9/04
54	Submit Notice for Caltrans Approval	7/30/04
55	Submit Draft IS for Approval	8/20/04
58	Draft IS Approved for Ciruclation	9/17/04
61	Mail DIS Clearinghouse/others	9/20/04
63	End of Public Circulation	10/22/04
65	Hold Public Hearing	10/27/04
68	Submit Final IS/ND to Caltrans	11/25/04
102	Submit Draft Type Selection Report	12/8/04
79	Submit Draft Materials/Geotechnical Report	1/12/05
82	Submit R/W Impact Map	1/19/05
69	CT Review Final IS/CE	1/20/05
95	Submit 35% PS&E	1/26/05

**Exhibit "A-1"**  
**Milestone Schedule for**  
**Mathilda Avenue Overhead Improvements**

<b>ID</b>	<b>Task</b>	<b>Finish</b>
104	City Completes TS Review	1/26/05
106	Submit Bridge General Plan	2/7/05
71	File CEQA Determination Notice	2/15/05
97	City Completes 35% Review	2/23/05
108	Type Selection Meeting	2/28/05
110	Submit Final Type Selection	3/7/05
74	Environmental Clearance Finalized	4/5/05
139	Submit Draft PS&E (65%)	6/30/05
141	City/CT Completes 65% PS&E Review	8/11/05
146	Submit 95% PS&E/Permits	10/10/05
148	City/CT Completes 95% PS&E Review	11/7/05
153	Submit 100% PS&E/Permits	12/29/05
155	City/CT Completes 100% PS&E Review	1/12/06
157	Submit Originals - 100% PS&E	2/16/06
160	Advertise Date	3/9/06
162	Bid Open	4/20/06
164	Contract Award	6/29/06